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substance of which the greater part of the cerin consists is no aldehyde, but a hydrated acid, existing as such in bees'-wax.

The acid is best prepared by precipitation from the alcoholic solution of the cerin by an alcoholic solution of acetate of lead, and subsequent separation and precipitation of the acid by methods described in the present paper. When purified, the acid is a white brittle body, of a crystalline appearance, melting at from 79° to 80° C. The formula of the acid is $C_{54} H_{54} O_4$, a formula which was determined by the analysis of the silver salt having the constitution $C_{54} H_{53} O_3 + AgO$, and of the compound ether $C_{58} H_{58} O_4 = C_{54} H_{53} O_3 + C_4 H_5 O$. The acid is volatile: it was analysed after distillation; and it was also procured from the wax itself in a pure state by simple processes of crystallization. To this acid the author gives the name of *Cerotic acid*.

By the action of chlorine, the wax acid is converted into a substance having all the appearance of a gum-resin; a change analogous to which may be effected in various other wax substances examined by the author. It has still the characters of an acid, and has the formula $C_{54} \left\{ \begin{smallmatrix} H_{42} \\ Cl_{12} \end{smallmatrix} O_4 \right.$, a formula which is confirmed by that of the compound ether $C_{58} \left\{ \begin{smallmatrix} H_{46} \\ Cl_{12} \end{smallmatrix} O_4 \right.$. The analyses of these substances are given.

When distilled in a pure state, the cerotic acid is volatile. When mixed with other waxy matters, however, it passes by distillation entirely into volatile oils, a circumstance which accounts for the fact that it has never been dissolved in the wax distillate. By precipitating a weighed quantity of wax by acetate of lead, the quantity per cent. of the cerotic acid in the bees'-wax, namely 22, was determined.

This acid was present in all the European bees'-wax examined by the author; but suspecting that its quantity might vary in other instances, he procured bees'-wax from Ceylon, formed under different conditions of climate and vegetation, and found on examination that there was a total absence of the acid in that specimen. The author draws attention to this curious variation in the nature of an animal secretion under different conditions of life, a variation of which we have another example in that of the volatile acid of butter, discovered by Leich; namely, that the butyric and caproic acid of one season were, in another, replaced by vaccinic acid, differing from the former acids in the amount of oxygen alone.

"A statement of the working of the Compasses on board the Honorable East India Company's Iron Steamer Pluto, from September 1841, on her passage from England to China, and during her service in those seas, until her arrival at Calcutta in January 1843." By John Tudor, Commander R.N. Communicated by S. Hunter Christie, Esq., Sec. R.S., &c.

The author states that the compasses of the Pluto were adjusted by Mr. Sims, of the firm of Troughton and Sims, by order of Mr.

Pencoote of the East India House, under whose directions that ship was fitted out; and it is to the great pains taken by Mr. Sims in placing the magnets employed for counteracting the local attraction that the author attributes the undeviating accuracy of those compasses during the whole time the *Pluto* was under his command in both hemispheres. He observes that, in the first place, much care is required in securing the magnets, and protecting them from wet, after their proper position has been ascertained. In the case of the *Pluto*, two magnets were placed under the deck in the author's cabin; one of them eighteen inches below the deck, being, it is true, an eyesore, but one of trifling consideration, when compared with the great importance of the well-working of the compass. The next point to be attended to is that the cards, or needles, should be all of the same size, and exactly corresponding with that of the compass used at the placing of the magnets for counteracting the local attraction. The bittacles should all be of the same make and height, and the compass-boxes of the same size; so that whenever a new compass or a fresh bittacle is wanted, the circle in which the needle moves may remain at the same angle from the magnet as at the first adjustment. On a strict attention to these precautions will depend the well-working of the compass in all iron vessels, and also in wooden vessels whenever the quantity of iron they contain creates the necessity of measures being taken for counteracting local attraction.

It has been alleged that the adjustments for local attraction made in northern latitudes are not correct when the ship is south of the equator; but the author states that, in the *Pluto*, he observed no difference; that ship having made, while under his command, passages of many thousand miles, comprising 94 degrees of latitude, namely from 51° North to 43° South, and 153 degrees of longitude, namely from 30° West to 123° East, during the whole of which he never found any other correction for the compasses necessary excepting that required for the magnetic variation, the local attraction having been completely neutralized.

A diagram is subjoined, showing the positions of the compensating magnets with relation to the compass.

“Practical Remarks on Annealing Flint-Glass.” By Apsley Pellat, Esq., of the Falcon Glass Works, Holland Street. Communicated by Joshua Field, Esq., F.R.S.

This paper is entirely occupied with practical details relating to the art of annealing flint-glass and depriving it of colour, the author stating that he leaves the rationale of these facts to be explained by philosophers. He thinks, however, that they are reconcilable with the theory of Scheele, as explained by Bergman, and detailed by Murray in his work on Chemistry.